Introduction

Pipe and Lucerne Lakes are partially inside the City of Maple Valley jurisdiction. These lakes have historically be treated for noxious aquatic weeds. In 1985 Aquatechnex biologists divers discovered Hydrilla present in the littoral areas of Pipe Lake. Hydrilla is a class A noxious weed in Washington State, it is probably the most problematic invasive aquatic weed in the United States and this discover was the first and only known infestation in Washington at that time.

The Washington Department of Ecology and the Noxious Weed Board mobilized to combat this threat. Initially Aquatechnex designed and implemented a Sonar Herbicide treatment program to target the plants. This was very effective in terms of removing hydrilla biomass each year. Hydrilla however form a tuber in the sediments that detaches from the roots of the plant and these tubers accumulate over time. They are not subject to herbicide impacts until they sprout and grow. As a consequence, the lake had to be treated for a number of years until the tuber bank was exhausted.

King County took over the treatment program by bringing it in house for the last few years of the program and they declared hydrilla eradicated recently.

Their ongoing surveys did however note the introduction of Eurasian Milfoil. The City of Maple Valley requested a lake survey to map this problem and this report documents that work.

Methods and results

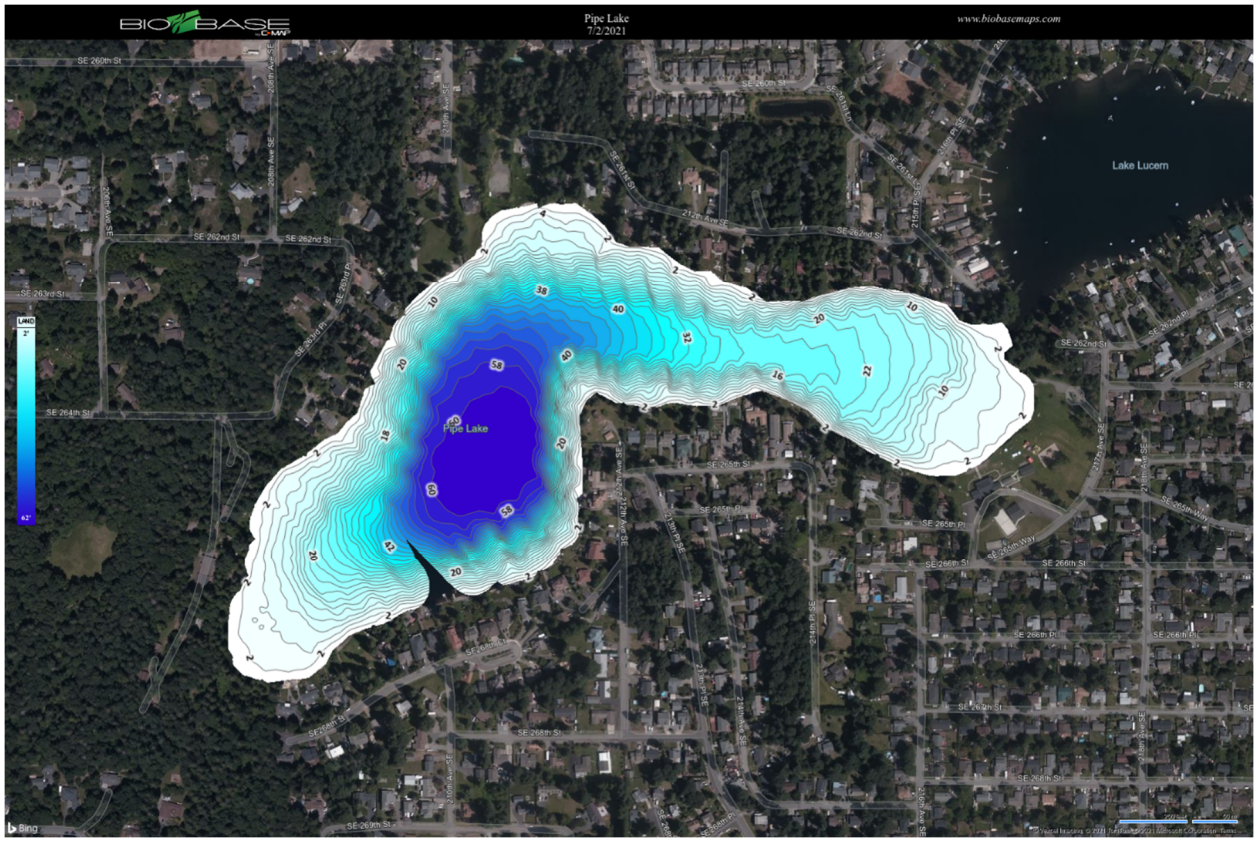
A mapping vessel was mobilized to the lake on July 2nd, 2021. The boat was equipped with a hydro-acoustic vegetation mapping system and a Trimble submeter DGPS data logging receiver with a data dictionary set up for Eurasian Milfoil mapping.

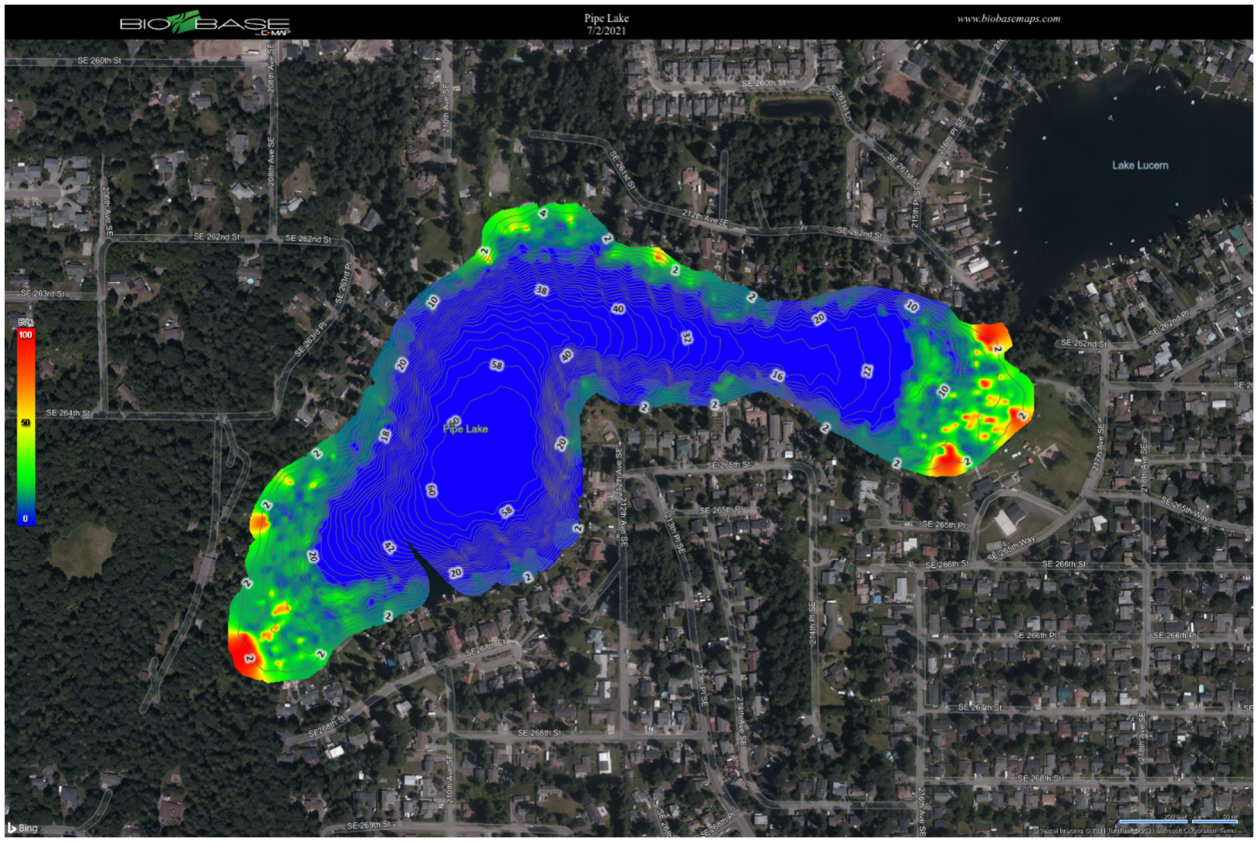
The mapping vessel performed a hydro acoustic mapping mission following transects that covered the entire surface of both Pipe and Lucerne lakes. This system produces three map types.

The bathymetry map collected helps define the littoral areas of the lake where plants get enough light to grow. The aquatic plant biovolume map show the location, shape and percent of the water column impacted with aquatic plant growth in the lake to focus observations for noxious weeds, the sediment composition map shows the amount of organic sediment accumulation.

These maps are shown on the following pages. The aquatic plant biovolume map displays aquatic plant coverage via a HEAT map and the scale is on the left side of the image. The HEAT ramp scale starts on the bottom with blue indicating no vegetation present, red at the top signifies that 100 percent of the water column is filled with vegetation and the colors in between show the percent of the water column filled with vegetation.

There is also a link to the vegetation report following each lakes imagery.





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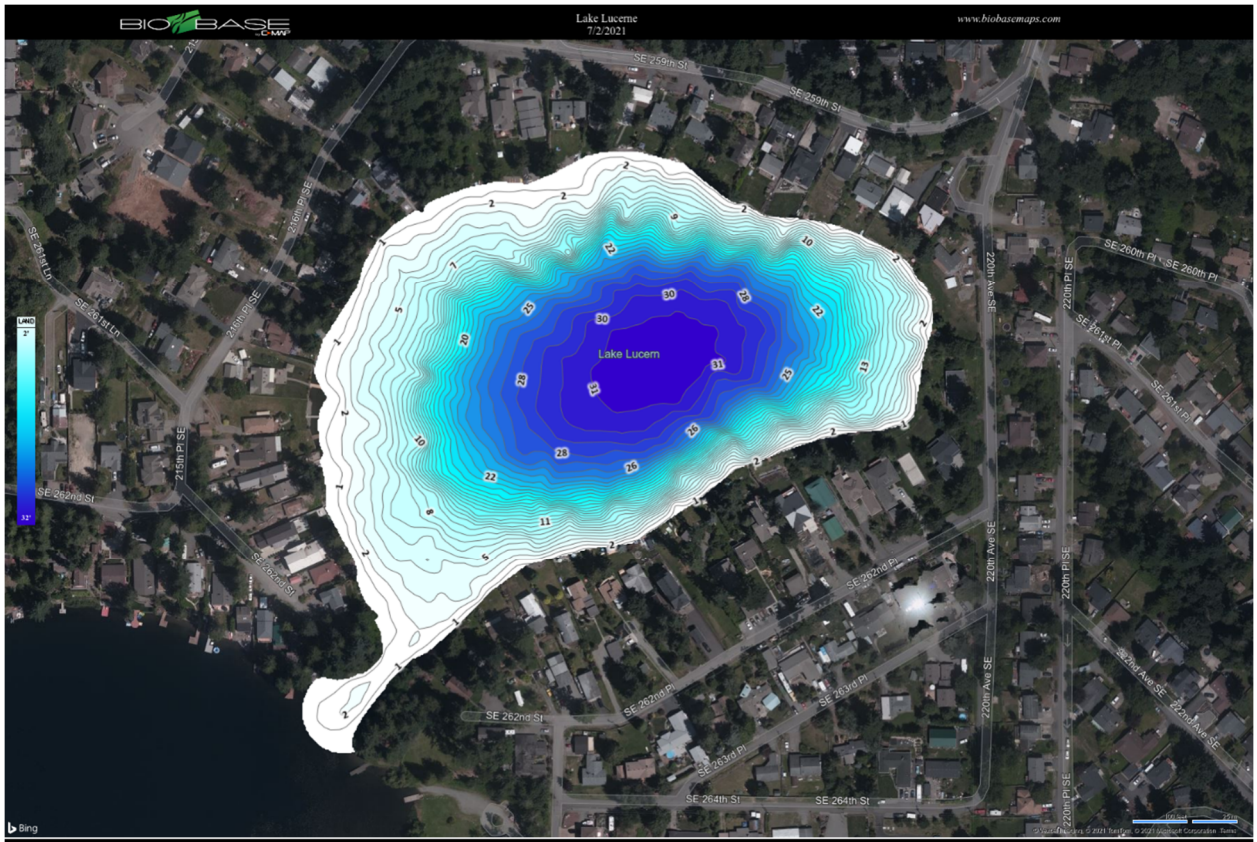

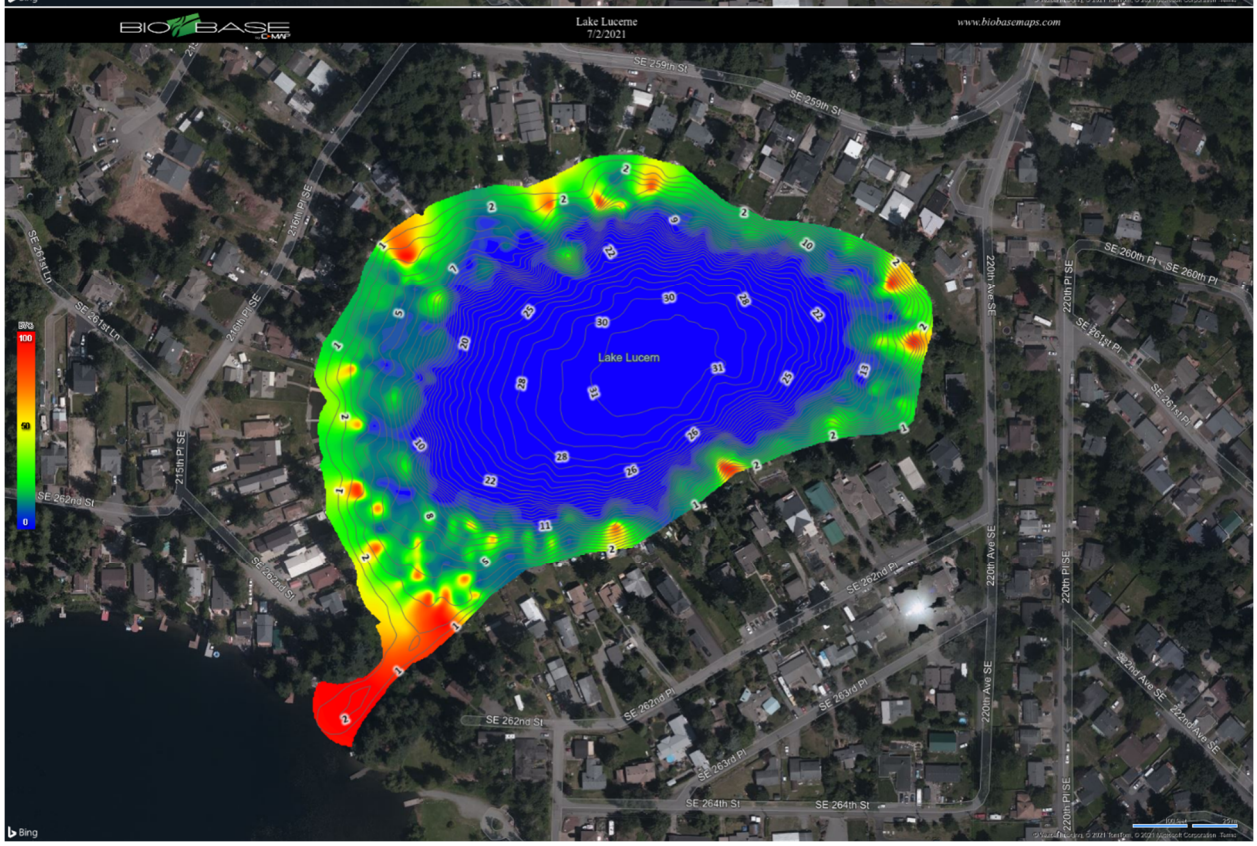

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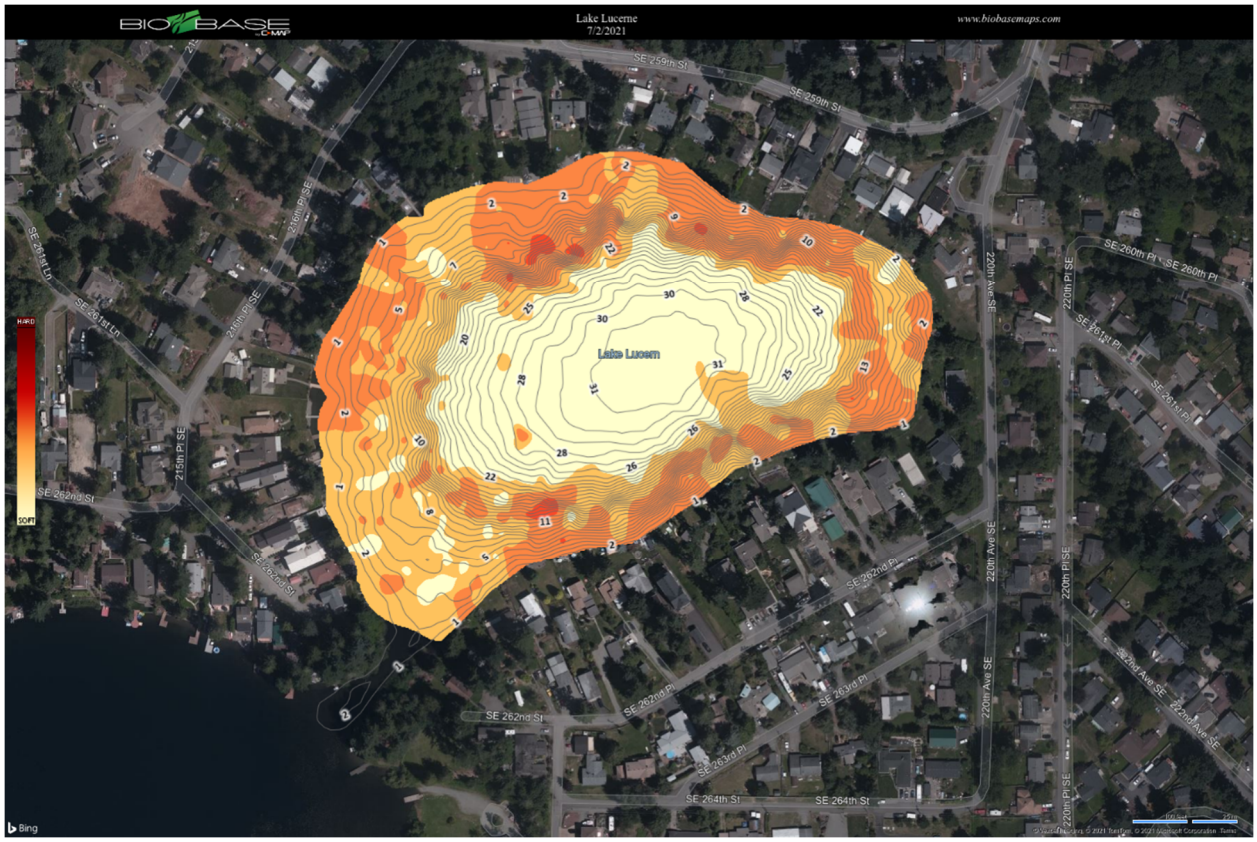
At this point in the growing season, we observed Eurasian Milfoil at relatively low densities in a few locations in the lake. The dominate aquatic plants in the lake were potamogetons species. The dominate species was *Potamogeton amplifolious* or Large Leaf Pondweed was the dominate species present where water column data shows 100 percent.

Eurasian Milfoil was observed as mapped on the following page. At this point our observation is that there are scattered plants mixed with native pondweed species in these areas. If treatment is considered, we would need a permit. Coverage may exist with King County for these lakes, and if so we could transfer that permit. If not, we would have to obtain a permit.

It should also be noted that we observed and met with a lake volunteer who has been raking aquatic plants out of the littoral area, he was working in the Lucerne area and much of the shoreline looked like there had been plant removal activity, so it may be that milfoil plants were removed prior to our visit. It should also be noted that there would probably still be milfoil root crowns present to generate new growth.

We can provide a quote for treatment if there is interest.

The sediment hardness maps are provided here. They don't really have much to do with treatment but interesting information.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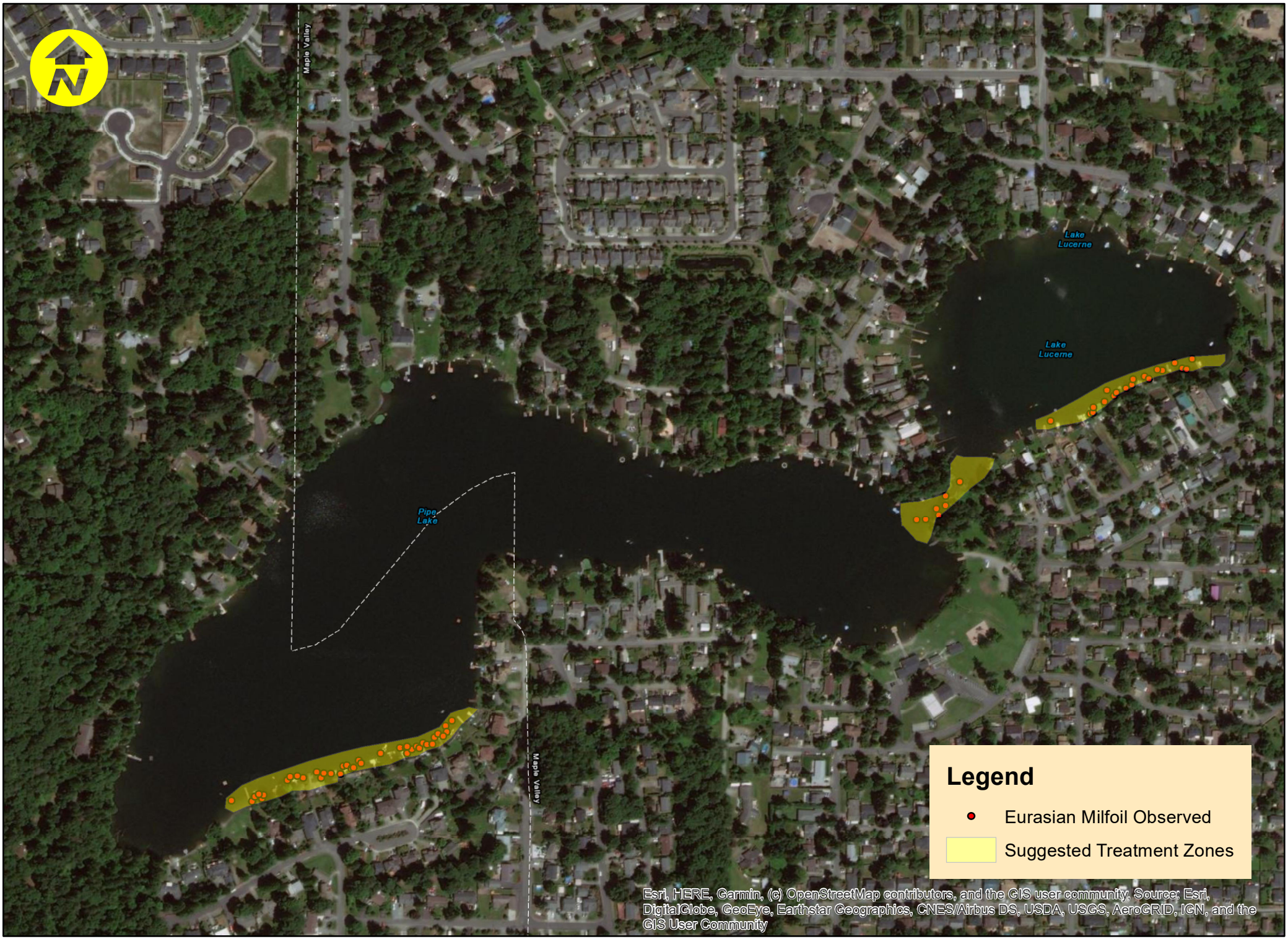

Eurasian Milfoil Survey 2021